IN THE DRAWINGS

The attached sheet of drawings includes changes to Figs. 12 and 13. This sheet, which includes Figs. 12 and 13, replace the original sheet including Figs. 12 and 13.

Attachment: Replacement Sheet(s)

REMARKS

Favorable reconsideration of this application in view of the above amendments and following remarks is respectfully requested.

Claims 1-8 are pending in this application. By this amendment, the drawings are amended; Claims 1-5 are amended; Claims 6-8 are added; and no claims are canceled herewith. The claim amendments are supported by the original specification at least at page 29, line 8 to page 30, line 14; and page 31, line 12 to page 33, line 22. It is respectfully submitted that no new matter is added by this amendment.

In the outstanding Office Action, Figures 12-13 were objected to; Claims 1-5 were rejected under 35 U.S.C. § 112, first paragraph; Claim 2 was rejected under 35 U.S.C. § 112, second paragraph; Claims 1 and 3-5 were rejected under 35 U.S.C. § 102(b) as anticipated by JP 2000-243419; and Claim 2 was rejected under 35 U.S.C. § 103(a) as unpatentable over JP '419 in view of JP 11-073979.

With respect to the objection to the drawings, Figures 12 and 13 are amended by the present amendment to be labeled as Prior Art. Accordingly, withdrawal of the objection to the figures is respectfully requested.

With respect to the rejection of the claims under 35 U.S.C. § 112, first and second paragraph, Claims 1-5 are amended by the present amendment. Accordingly, withdrawal of the rejection of the claims is respectfully requested.

With respect to the rejection of the claims under 35 U.S.C. § 102 and § 103, those rejections are respectfully traversed. It is respectfully submitted that the applied art does not teach or suggest a polymer electrolyte fuel cell including a plurality of unit cells each having a proton exchange membrane, a fuel electrode provided on one surface of the membrane and having a catalyst layer, and an oxidizer electrode provided on the other surface of the membrane and having a catalyst layer; a plate reactant-gas supplying separator having, in its

one surface that contacts the fuel electrode, fuel-gas supplying passages for supplying fuel gas to the fuel electrode, and having, in its opposite surface that contact the oxidizer electrode, oxidizer-gas supplying passages for supplying oxidizer gas to the oxidizer electrode; a fuel-gas manifold made in an edge part of the plate reactant-gas supplying separator; a fuel-gas inlet section provided adjacent to the fuel-gas manifold in the plate reactant gas supplying separator; a water manifold made in another edge part of plate reactant-gas supplying separator and passing through the plate reactant gas supplying separator; and a water-supplying unit to supply water from the water manifold to the fuel-gas supplying passages provided in the reactant-gas supplying separator, the water-supplying unit includes a header provided in the fuel gas inlet section to mix the fuel gas with the water, and a water-supplying groove which is made in the same surface of the plate reactant gas supplying separator as the fuel gas supplying passages and which communicates with the header and the water manifold, as recited in Claim 1 and similarly recited in Claims 3-5. As such, one or more examples of the present invention are directed to uniformly supplying water to the unit cells and providing a structure capable of realizing this feature at a low cost.

In contrast, JP-2000-243419 discloses a proton-exchange membrane fuel cell in which a header for mixing reactant gas with water and water manifolds (111, 112) are provided in a frame 10 and separated from a separator 40 having reactant-gas supplying grooves. Water manifold holes 111 and 112 are provided for supplying water to a group of first channels and a group of second channels with the first channels being selected every two channels from anode side channels (gas supplying grooves) 400 and the second channels being selected every two channels therefrom without overlapping the first channels. The water fed from a pump 3 is supplied alternately to the group of first channel and the group of second channels by operating a changing-over valve 5 with a controller 9.

However, as described above, the claimed water supplying unit has a water-supplying groove which is made in the same surface of the plate reactant gas supplying separator as the fuel gas supplying passages and which communicates with the header and the water manifold. Again, the applied art shows a header for mixing reactant gas with water and water manifolds (111, 112) being provided in a frame 10 and separated from a separator 40 having reactant-gas supplying grooves.

According to the claimed water-supplying unit, since it is made in the same surface of the plate reactant gas supplying separator as the fuel gas supplying passages, it can be made together with the reactant-gas passages by press molding of the separator. Accordingly, a manufacturing cost can be reduced in comparison with the applied art. Further, even if the separator is thin in thickness, it can be easily press-molded, resulting in making it possible to distribute water uniformly. In addition, the header for mixing reactant gas with water mixes the reactant gas with the water uniformly. For this reason, one or more examples of the present invention do not need a changing-over valve 5 for changing over the water which is used in the applied art. The applied art controls the changing-over valve 5 with the controller 9. In contrast, in one or more examples of the present invention, an amount of water is controlled. Therefore, as described above, embodiments of the present invention differ in a structure of the separator and a water supplying manner from the applied art.

With respect to Claim 2, Claim 2 was rejected under 35 U.S.C. 103(a) as being unpatentable over '419 in view of JP-11-073979. JP-11-073979 discloses using a porous member as means for feeding water to fuel-gas passages uniformly. However, JP'979 does not teach a diameter of the porous member. One or more embodiments of the present invention are directed to preventing the reactant gas from being leaked into the water even if the pressure of the reactant gas becomes higher than that of the water (wet-shielding). In order for this to be realized a pore diameter of the porous member is important. In the

claimed invention, the average pore diameter of the porous member is set at 20μm or less to help attain the wet-shielding. In accordance with this claimed feature, for example, even if the fuel gas pressure in the gas manifold 20 rose to a value 5 kPa higher than the pressure in the water manifold 21, no fuel gas would leak into the water manifold 21.

Accordingly, withdrawal of the rejection of the claims under 35 U.S.C. § 102 and § 103 is respectfully requested.

Consequently, for the reasons discussed in detail above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below listed telephone number.

Respectfully submitted,

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